



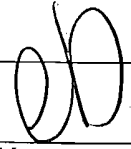
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/895,153	07/02/2001	Koon Gee Neoh	1781-0233P	9536
2292	7590	08/27/2004	EXAMINER	
BIRCH STEWART KOLASCH & BIRCH PO BOX 747 FALLS CHURCH, VA 22040-0747			TSOY, ELENA	
			ART UNIT	PAPER NUMBER
			1762	

DATE MAILED: 08/27/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 09/895,153	<b>Applicant(s)</b> NEOH ET AL.	
	<b>Examiner</b> Elena Tsoy	<b>Art Unit</b> 1762	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 28 July 2004.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-19,34-37,39 and 40 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 39 is/are allowed.
- 6) ☒ Claim(s) 1-19,34-37 and 40 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All   b) ☐ Some \* c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                             | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)         | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____                                    |

***Response to Amendment***

1. Amendment filed on July 28, 2004 has been entered. Claims 20-33, 38 have been cancelled. New claims 39 and 40 have been added. Claims 1-19, 34-37, 39, 40 are pending in the application.

***Terminal Disclaimer***

2. The terminal disclaimer filed on July 28, 2004 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of claim 25 of copending Application No. 09/828924 if patented, has been reviewed and is accepted. The terminal disclaimer has been recorded.

***Specification***

3. The Examiner's Note: the specification, which was objected to in the previous Office Action, was actually that of copending application 09/828924, which was filed together with present application. Due to inadvertent mistake, the disclosure of copending application 09/828924 was considered by the Examiner as the disclosure of the present application. The Examiner acknowledges that the specification of current application 09/895,153 should not have been objected to since the disclosure of the present application does have antecedent basis for claimed subject matter.
4. Objection to the specification to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o) has been withdrawn due to amendment.
5. The Examiner's Note: for examining purposes, "a pre-doped composition" of claim 1 was interpreted according to prior art as a composition having up to 50 % of viologen salt.

***Double Patenting***

6. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

7. Rejection of claims 1-5, 19 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 25 of copending Application No. 09/828924 has been withdrawn due to a timely filed terminal disclaimer.

***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. **Claims 1, 7-11, 17** stand rejected under 35 U.S.C. 103(a) as being unpatentable over Mikhael et al (US 6,040,017) in view Kato et al (US 4,875,762) for the reasons of record as set forth in Paragraph No. 8 of the Office Action mailed on April 28, 2004.

9. **Claim 2** stands rejected under 35 U.S.C. 103(a) as being unpatentable over Mikhael et al (US 6,040,017) in view Kato et al (US 4,875,762), further in view of IBM Technical Disclosure Bulletin (1979) for the reasons of record as set forth in Paragraph No. 9 of the Office Action mailed on April 28, 2004.

Art Unit: 1762

10. **Claims 1-5, 7-11, 15, 17, 18** stand rejected under 35 U.S.C. 103(a) as being unpatentable over Afzali-Ardakani et al (US 5,776,370) in view of Kato et al (US 4,875,762), further in view of IBM Technical Disclosure Bulletin (1979) for the reasons of record as set forth in Paragraph No. 10 of the Office Action mailed on April 28, 2004.

11. **Claim 6** stands rejected under 35 U.S.C. 103(a) as being unpatentable over Afzali-Ardakani et al (US 5,776,370) in view of Kato et al (US 4,875,762), further in view of IBM Technical Disclosure Bulletin (1979), and further in view of Beratan et al (US 5,016,063) for the reasons of record as set forth in Paragraph No. 11 of the Office Action mailed on April 28, 2004.

12. **Claims 12-16** stand rejected under 35 U.S.C. 103(a) as being unpatentable over Mikhael et al (US 6,040,017) in view Kato et al (US 4,875,762), further in view of Inata et al (US 5,068,062) for the reasons of record as set forth in Paragraph No. 12 of the Office Action mailed on April 28, 2004.

13. **Claims 12-16** stand rejected under 35 U.S.C. 103(a) as being unpatentable over Afzali-Ardakani et al (US 5,776,370) in view of Kato et al (US 4,875,762), further in view of IBM Technical Disclosure Bulletin (1979), further in view of Inata et al (US 5,068,062) for the reasons of record as set forth in Paragraph No. 13 of the Office Action mailed on April 28, 2004.

14. **Claims 19, 35** stand rejected under 35 U.S.C. 103(a) as being unpatentable over Afzali-Ardakani et al (US 5,776,370) in view of Kato et al (US 4,875,762), further in view of IBM Technical Disclosure Bulletin (1979), and further in view of Rembaum (US 3,754,055) and Spence (US 6,083,355) for the reasons of record as set forth in Paragraph No. 14 of the Office Action mailed on April 28, 2004.

15. **Claim 34** stands rejected under 35 U.S.C. 103(a) as being unpatentable over Afzali-Ardakani et al (US 5,776,370) in view of Kato et al (US 4,875,762), further in view of IBM

Art Unit: 1762

Technical Disclosure Bulletin (1979), and further in view of Spence (US 6,083,355) and Allemand et al (US 5,729,379) for the reasons of record as set forth in Paragraph No. 15 of the Office Action mailed on April 28, 2004.

16. **Claims 36, 37** stand rejected under 35 U.S.C. 103(a) as being unpatentable over Afzali-Ardakani et al (US 5,776,370) in view of Kato et al (US 4,875,762), further in view of IBM Technical Disclosure Bulletin (1979), further in view of Beratan et al (US 5,016,063) and further in view of Pohl et al (US 4,455,233) and Rembaum (US 3,754,055) for the reasons of record as set forth in Paragraph No. 16 of the Office Action mailed on April 28, 2004.

17. **Claim 40** is rejected under 35 U.S.C. 103(a) as being unpatentable over Mikhael et al (US 6,040,017) in view Kato et al (US 4,875,762) for the reasons of record as set forth in Paragraph No. 8 of the Office Action mailed on April 28, 2004 because Mikhael et al do not teach adding acid or organic solvent for the reaction between the viologen and the polymeric material.

18. **Claim 40** is rejected under 35 U.S.C. 103(a) as being unpatentable over Afzali-Ardakani et al (US 5,776,370) in view of Kato et al (US 4,875,762), further in view of IBM Technical Disclosure Bulletin (1979) for the reasons of record as set forth in Paragraph No. 10 of the Office Action mailed on April 28, 2004 because Mikhael et al do not teach adding acid for the reaction between the viologen and the polymeric material.

***Allowable Subject Matter***

19. Claim 39 is allowed as being canceled allowed claim 38 rewritten in independent form.

20. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue

Art Unit: 1762

fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

***Response to Arguments***

21. Applicants' arguments filed July 28, 2004 have been fully considered but they are not persuasive.

(A) Applicants argue that the Examiner misunderstood the purpose of the Declaration. Dr. Liu's Declaration was made to provide evidence that forming the viologen salt in situ upon a substrate provides a much more conductive polymer compared to grafting an already formed viologen salt to the substrate.

Then, Dr. Liu's Declaration was made to provide evidence that invention of claim 5 is superior than invention of claim 4 or invention of claim 7, since claim 5 is directed to the viologen salt formed in situ upon polymeric material (substrate) whereas claim 4 is directed to grafting already formed viologen salt to the substrate and claim 7 is directed to mixing already formed viologen salt with the polymeric material.

(B) Applicants argue that the Examiner failed to establish prima facie obviousness of the invention over Mikhael et al in view Kato et al since Kato does not teach that quinones and viologens are equivalent in their ability to oxidize a polyaniline compound, or any other polymer, so as to make it conductive. Rather, Kato only describes photochromism and electrochromism of viologens in association with an electron donor such as polyvinyl pyrrolidinone. Furthermore, there is no motivation to combine of the other cited references since conductivity of polyaniline.

The Examiner respectfully disagrees with this argument. First of all, the Examiner did not rely on Kato that quinones and viologens are equivalent in their ability to oxidize a polyaniline

Art Unit: 1762

compound. The Examiner cited Kato to show that viologens are suitable acceptors for donors such as polyaniline.

Mikhael et al teach that electrically conductive polymeric material can be made with a dopant which may be of **any** electrophilic *organic substance* that **interacts or complexes** with **any** electron-rich organic donor material (See column 3, lines 19-23) such as C60 fullerene, tetracyanoethylene, or tetrafluoromethanecyanoquinodimethane (quinone), etc. as the electron-acceptor dopant and vinylcarbazole, 9,10-bis(phenylethnyl) anthracene, sudan azo dyes, or polyaniline as the electron-donor substance (See column 3, lines 44-48).

Kato et al teach that alkyl viologens such as methyl viologen or benzyl viologen, which are known as organic compounds which manifest *photochromism* (color change on exposure to light) and *electrochromism* (color change on exposure to volatage) (See column 1, lines 6-16; column 2, lines 53-61) can be used with an electron donor such as polyvinyl pyrrolidone to effect **photoreduction** (See column 3, lines 8-13). In other words, Kato et al is cited to show that alkyl viologens can be easily photoreduced on exposure to light in the presence of a donor.

Since polyaniline is a well-known donor, one of ordinary skill in the art at would have **reasonable expectation of success** (i.e. would have motivation) in using alkyl viologens such as methyl viologen or benzyl viologen as an electron acceptor in Mikhael et al that would effect photoreduction with well-known donor polyaniline.

(C) Applicants argue that in Kato, absorption maxima at 610 and 400 nm are observed when the composition is subjected to UV irradiation whereas in the instant specification, the absorption band at 615 nm due to polyaniline disappears and a new high intensity tail extending into the near-IR region (above 800 nm) is observed.



Art Unit: 1762

Absorption maxima of donor-acceptor reduction would depend on many factors including nature of donor and acceptor. Since in Kato et al, absorption maxima was observed in montmorillonite-PVP-viologen (See column 6, lines 17-21) not in Polyaniline-viologen absorption maxima is different from 800 nm.

(D) Applicants argue that Kato requires the use of acid and organic solvents.

Kato requires the use of acid for making n-propyl ammonium-tetratitanic acid composite, which was caused to react with methyl viologen to produce a tetratitanic acid-methyl viologen interlayer compound (See column 3, lines 40-65).

However, Kato et al was cited by the Examiner to show that alkyl viologens can be easily photoreduced on exposure to light in the presence of a donor.

### ***Conclusion***

22. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Art Unit: 1762

23. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elena Tsoy whose telephone number is (571) 272-1429. The examiner can normally be reached on Mo-Thur. 9:00-7:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive Beck can be reached on (571) 272-1415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Elena Tsoy  
Primary Examiner  
Art Unit 1762

ELENA TSOY  
PRIMARY EXAMINER



August 25, 2004